

# THE EARLY STAGES OF INDIAN LEPIDOPTERA.

BY

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## PART VI.

(Continued from page 44 of this volume).

### RHOPALOCERA.

#### SATYRIDAE.

*Mycalesis visala* Moore, *visala*

Moore, *Lep. Ind.*, i, 189, pl. 64, figs. 1, 1a-1i. 1890-92.

Ovum spherical, the base slightly flattened, pearly white, minutely punctate. Deposited 6-viii-40. Hatched 9-viii-40.

Newly hatched larva white, the head black. Head with a short tooth projecting subdorsally. Anal somite ending in two short processes. A few hairs. After feeding the body becomes green and later a dark crimson dorsal stripe appears on the posterior third of the body, this stripe broadens considerably on the anal somite and extends along the anal processes. Moulded 12-viii-40.

2nd instar—Similar. The cephalic and anal processes proportionately rather larger. Under a lens there is a faint yellowish white subdorsal line and the dorsum is sprinkled with minute yellow dots. Moulded 14-viii-40.

3rd instar—Similar. Moulded 16-viii-40.

4th instar—Head blackish brown, the backs of the processes dull greenish. Body dull green, shagreened with minute yellowish white dots. A dark dorsal stripe, becoming dull crimson on the 10th somite and continuing up the anal processes. A pale subdorsal and sublateral line. Legs and prolegs green. Head and body finely pubescent. Moulded 19-viii-40.

Final instar—Head blackish brown, the backs of the processes dull pinkish buff, and with four brownish spots frontally forming a semicircle. Body pinkish buff, granular and finely pubescent. A dark dorsal stripe, without any trace of crimson. A yellowish subdorsal stripe, edged below with darker, and a yellowish sublateral stripe. A series of oblique dark stripes arising subdorsally and ending in the lateral area. 1st pair of legs blackish brown, the others and the prolegs pinkish buff. Anal processes and venter pinkish buff. As the larva ages, the colour darkens to purplish brown, the markings remaining unchanged. Immediately before pupation the markings fade and the larva becomes a bright green. Pupated 24-viii-40.

There is probably a green form of larva also, but I have not bred it.

Pupa bright apple green in colour. 2nd to 5th abdominal somites with paired subdorsal yellow dots. A subternal yellow dot

on the wing case. Under a lens, the abdomen with very minute yellow speckling. Head straight in front. Thorax slightly keeled. Wing cases slightly dilated across the dorsum. Cremaster long and pinkish in colour. A female emerged 30-viii-40.

Food-plant—Grasses.

Described from larvae bred from ova from a Calcutta caught female.

#### LYCAENIDAE.

##### *Tarucus nara* Koll.

Head pale brown, retractile and very small. Body flattened and with the lateral edge slightly scalloped by the intersegmental divisions. Ground colour very pale green, in some cases more or less tinged with purplish. A white dorsal stripe beginning from the 2nd somite, and sometimes edged, either wholly or partly, with crimson, and sometimes with a central crimson line, which may be confined to the first few somites or extend the whole length of the dorsal stripe. The green forms with a subdorsal pattern formed of four white specks on each somite, the purple with a subdorsal series of single crimson dots. A lateral line, white in the green forms, crimson in the purple. Body densely covered with minute white granules and white pubescence. Legs and prolegs green. Venter green, even in the purple forms. Ant gland and tubercles not prominent.

Ants do not seem necessary to the larva's wellbeing as, although thickly attended when found, some lived for a week before pupation without their attentions.

Pupa on a thin carpet of white silk and supported by a girdle. Of the usual Lycaenid shape. Colour yellowish green, the wing cases less tinged with yellow, and more or less speckled and shaded with black, some pupae having no more than a dorsal and spiracular series of black specks, whilst others are almost completely black shaded.

Food-plant—*Zizyphus Jujuba*. The larva feeds on the under-surface of the leaf, leaving a semi-transparent track about an eighth of an inch wide.

Described from a number of full-fed larvae found in Calcutta 24-x-40, one of which pupated 26-x-40 and a male emerged 2-xi-40.

Bingham quotes de Niceville's description of the larva of *T. theophrastus* F., of which species *nara* was previously considered a subspecies, which tallies substantially with mine. He adds that the ants attending the larvae have been identified by Dr. A. Forel as *Camponotus rubripes* Drury (*sylvaticus* Fabr., subspecies *compressus* Fabr.) and *Phidole latinoda* Roger.

##### *Zizeeria trochilus* Freyer, *putli* Koll.

Bingham, *Fauna Brit. Ind.*, Butterflies, ii, 366. 1907.

Head black, small and retractile. The usual woodlouse-shaped Lycaenid larva with the segments rather deeply cut. Colour bright grass green with a darker green dorsal stripe edged with paler and a white sublateral line. A series of very faint oblique pale lines subdorsally. Body thickly covered with white pubescence. Ant gland and tubercles small and inconspicuous.

Ants do not seem essential to the larva's development as mine lived for ten days without their attentions and pupated successfully.

Pupa formed on a leaf of the food-plant on a carpet of white silk and supported by a girdle. Green with a darker dorsal stripe along the abdomen. Thorax domed. The anal end rounded and slightly flattened. With the exception of the wing cases, densely clothed with longish white hair.

Food-plant—*Rhynchosia minima* DC. (Leguminosae).

Described from a full-fed larva found in Calcutta 12-x-40, pupated 15-x-40, and a male emerged 19-x-40.

Bingham, quoting de Niceville, writes:—'Larva when full-grown a little over a quarter of an inch in length, onisciform as usual; the head very small, black and shining, entirely hidden when at rest, being covered by the second segment; the colour of the body grass-green, with a dark green dorsal line from the third to the twelfth segment; two subdorsal series of short parallel streaks, each pair being divided from the next by the segmental constriction, these streaks paler than the ground colour; an almost pure white lateral line below the spiracles, which is the most conspicuous of all the markings; the segmental constrictions rather deep; the whole surface of the body shagreened, being covered with very small whitish tubercles, from which spring very short colourless hairs. Dr. George King, Superintendent of the Royal Botanical Gardens, Sibpur, near Calcutta, has identified its food-plant as *Heliotropium strigosum*, Willd. Professor A. Forel identified the ant as *Pheidole quadrispinosa*, Jerdon. Pupa about three-sixteenths of an inch in length, pale green, of the usual Lycaenid shape, densely covered everywhere, except on the wing-cases with somewhat long white hairs.'

## HETEROCERA.

### SYNTOMIDAE.

#### *Syntomis passalis* F.

Ovum white, unsculptured, spherical with the base slightly flattened. Laid in a large batch but with the individual ova not touching each other. Deposited 24-viii-40. Hatched 29-viii-40.

Larva with the head bright reddish chestnut, rather small. Ground colour of the body deep blackish purple. Each somite with a transverse series of six rosettes of short blackish-grey spinous hair, arising from blackish warts. Legs bright reddish chestnut. Prolegs purple.

Pupa in a slight cocoon of brown silk interwoven with a few of the larval hairs; the bulk of the hairs, however, are not shed and remain attached to the cast skin. Dark reddish brown, the abdominal somites with a central ring of conjoined black spots. Wing cases black with the veins red-brown. Leg cases red-brown streaked with black. Antenna cases red-brown but unstreaked. Apex of the abdomen blunt and densely clothed with hooked golden-brown hairs.

Food-plant—Dahlia and Orange Cosmos,

Described from a number of full-fed larvae bred from ova from a Calcutta caught female, one of which pupated 8-x-40 and a male emerged 16-x-40.

## ARCTIIDAE.

*Amsacta lineola* F.

Ovum creamy white, spherical with the base slightly flattened. Minutely punctate. Laid in fairly large batches, the ova touching each other. Hatched on the fourth day.

Larva with the head honey brown, the clypeus filled in with smoky black and with a smoky black stripe outlining it. Body with a broad black dorsal stripe with a median pale line on the thoracic somites. The lateral area brownish grey. Hair fairly short, that on the dorsum black and arising from a double dorsal series of small and a subdorsal series of larger dull blackish blue warts; on the lateral area grey and arising from a lateral and sublateral series of greyish warts. Spiracles white and set in a broad pinkish ring. Venter blackish. Prolegs honey brown. Legs blackish.

Food-plant—Orange Cosmos.

Described from a full-fed larva bred from ova deposited by a Calcutta caught female in August 1940. The larva died when preparing for pupation.

## LYMANTRIIDAE.

*Laelia exclamationis* Koll.

Butlr., *Ill. Het.*, vii, 123, pl. 138, fig. 6. 1889.

Hamps., *Fauna Brit. Ind.*, Moths, i, 442. 1892.

Head dull brownish, the clypeus filled in with blackish. Ground colour of body blackish, a pale brownish subdorsal stripe, the sub-spiracular area greyish brown. Densely clad with brownish grey hairs arising from a subdorsal, supra- and sub-spiracular, and sublateral series of greyish brown warts. 4th to 7th somites each with a dense dorsal brush of silky hairs, dark brown in colour but appearing an almost silvery brown in certain lights. 11th somite with a similar dorsal brush. Legs pale brown. Venter and prolegs greyish brown. Spiracles white.

Pupa in a cocoon of brown silk mixed with larval hair. Wing, leg and antenna cases bright chestnut brown, the thorax and dorsum darker, the ventral surface of the abdomen paler. Thorax and first five abdominal somites with scar-like dorsal ridges of a pale brown granular appearance.

Food-plant—Coarse grasses.

Described from a full-fed larva found in Calcutta 2-x-40, spun 4-x-40, and a male emerged 14-x-40.

Hampson's description is 'Larva brown, with tufts of long grey and brown hair; dorsal tuft of short brown hair on 3rd to 6th somites; a subdorsal series of very short orange tufts, three to each somite; a lateral pale line.' Butler writes 'Larva blackish: head pale buff; two dorsal stripes of contiguous yellow and red spots interrupted on each segment by a whitish-brown spot or tubercle bearing long hairs, on the fifth to eighth segments these

tubercles are very large, prominent and woolly, and bear long hairs; those on the thirteenth segment are not prominent, but bear long tapering pencils of hair; the tenth and eleventh segments bear a small central dorsal carmine tubercle; an imperfect rose-pink stripe bearing tubercles of the same colour emitting pale brown hairs; a broad lateral rose-pink band, on and below which are small tubercles bearing white hairs; ventral surface yellow, streaked in front and at the sides with black; legs shining vermilion-red. Length of preserved larva 28 millim.' The figure appears to have been drawn from a blown larva.

## NOTODONTIDAE.

*Turnaca acuta* Wlk.

Ovum spherical, chalky white freckled with ochreous. Micro-pyle a dark spot. Laid in small batches or in twos and threes.

1st instar larva—Head yellowish brown. Body green with three dark brown lateral lines. Head and body with sparse black hairs. Shape rather broad anteriorly, tapering towards the rear.

Ova laid by a female in Calcutta 6-viii-40, hatched 11-viii-40. The female refused to lay until a bamboo leaf was put in the box. In spite of Seitz' suggestion that the larvae feed on Monocotyledons, they refused various species of grasses, bamboos and palms and died without feeding.

## LIMACODIDAE.

*Thosea loesa* Moore.

Hamps., *Fauna Brit. Ind.*, Moths, i, 379. 1892.

Hering Seitz, *Indo-Austr. Bombyces*, x, 712.

Head green, marked with brown round the jaws, retractile. 1st. somite retractile. Shape oval and flattened. Colour bright grass green. A narrow white dorsal stripe, edged with an interrupted dark blue line and running through a pink spot on the 7th somite. A series of eight subdorsal red spots. A subdorsal series of nine tufts consisting of four or five very short green bristles. A lateral series of eleven scoli, increasing in size from front to rear, first and second very short, crimson with black bristles and directed forwards, third to ninth longer, green tipped with pink and with green bristles and pointing sideways, tenth and eleventh similar but directed backwards.

Cocoon almost spherical, slightly longer than broad. Dark brown in colour veined with lighter, of the usual hard Limacodid type. One cocoon was almost black. Empty pupa skin yellowish brown.

Food-plant—Areca Palm.

Described from a full-fed larva found in Calcutta 6-x-40, spun 9-x-40, and a male emerged 4-xi-40.

Hampson's description, which is given under the name *sinensis*, is as follows:—'Yellow or green, with a white or yellow dorsal stripe, sometimes with a red spot at middle, subdorsal and sublateral series of spinous tubercles reddish towards tips. Cocoon purplish grey.' Seitz gives substantially the same description and adds that the larva lives on a great number of cultivated plants.



*Altha nivea* Wlk.

Head retractile, pale greenish marked round the jaws with brown. 1st somite retractile and edged with black anteriorly. Body pale green, a paler narrow dorsal and subdorsal stripe, a similar lateral stripe and one between it and the subdorsal. A yellow sublateral stripe defining the ventral area. Body oval, highly convex, without visible segmentation. The skin translucent in appearance and slightly granular in texture but without hairs or tubercles. The markings appear to be well below the surface of the skin and vary in intensity with the angle from which the larva is viewed. Spiracles round, yellow with a yellow ring.

Cocoon hard, compact, chocolate brown in colour and flecked with buff specks, particularly towards the front. These specks are white when the cocoon is newly spun. Shape round, slightly longer than broad. Empty pupa skin yellowish brown in colour.

Food-plant—*Tinospora cordifolia* Miers (Menispermaceae).

Described from a full-fed larva found in Calcutta 21-viii-40, spun 23-viii-40, and a female emerged 9-ix-40.

## PSYCHIDAE.

*Amatissa cuprea* Moore.

Brahmachari, *Journ. Bomb. Nat. Hist. Soc.*, xl, 56. 1938.

Head dark brown, streaked and speckled with paler. First three somites dark brown, mottled with paler, and with a dorsal, subdorsal and sublateral pale stripe. Abdominal somites very slightly chitinated and pinkish grey in colour. A whitish lateral line. Anal claspers and flap more heavily chitinated and yellow brown in colour. Abdominal prolegs very small. Legs brown marked with paler and increasing in size from 1st to 3rd pair.

Male pupa reddish brown, rather slender. The abdominal somites with the posterior edge rather wider than the anterior edge of the somite following and forming a ridge round it. 10th to 12th somites each with a transverse spined ridge posteriorly. End of the abdomen turned under and the cremaster consisting of two short cone-shaped processes each ending in a sharp point. Female pupa rather paler in colour, the usual type of chitinated maggot without leg, antenna or wing cases, broader behind and tapering anteriorly.

Case cylindrical, tapering from mouth to apex, and made of greyish silk covered with minute fragments of vegetable matter. Larger pieces of leaf and twig are also attached, these are fixed by the upper end, the lower hanging loose. Before pupation a slender peduncle, about a quarter of an inch long, is spun fixing the case to a leaf or twig. As usual, the imago emerges from the bottom of the case.

Food-plant—Found on *Ipomoea palmata*, but fed readily on *Lagerstroemia indica*. Brahmachari records it as a pest on Banana in Southern India.

Described from a larva and pupae from cases found in Calcutta 28-ix-40, from another of which a male emerged 5-x-40.

Brahmachari describes the larva as having the head and thoracic somites grey in colour with patches of brown, the abdomen

of darker hue. He gives a figure of the male pupa, but does not shew the expanded abdominal rings nor the spinous ridges and makes no mention of them in the text.

## NOCTUIDAE.

*Beara dichromella* Wlk.

Moore, *Lep. Ceyl.*, ii, 116. 1882-83.

Head reddish brown, marked with darker above. 1st to 3rd somites with the dorsum greyish white with a longitudinal and transverse black lines. 4th somite with the dorsum black with a crescent-shaped yellow mark. 5th somite with a black dorsal hump. 6th to 10th somites with a broad creamy yellow dorsal stripe with a purplish black median line. 11th somite with a black dorsal hump edged on each side and posteriorly with orange. 12th and 13th somites orange yellow. The lateral area black with two indistinct and broken yellowish lines. A broken orange sublateral stripe from 2nd to 10th somite. Sparse white hairs arising from white specks. Spiracles black ringed with white. Venter greyish green. Legs and prolegs greyish green.

Cocoon of papery yellow silk. Supported by a short stalk spun about two-thirds from the front of the cocoon. Canoe-shaped, the front sloping backwards and slightly ridged and rising into a backward pointing curved projection. A small point about the middle and the posterior end terminating in a small double point. The imago escapes through a slit in front.

Food-plant—*Zizyphus Jujuba*.

Described from a full-fed larva found in Calcutta 28-x-40, spun 30-x-40 and a female emerged 6-xi-40.

Moore's description is as follows:—'Larva pale purple, with a purple-red dorsal tubercle on sixth and another on twelfth segment; anterior segments with minute black-bordered white tubercular spots, and two lateral rows of similar spots on all the segments, from each of these and the dorsal tubercles project short fine whitish hairs; a dorsal yellow band from anterior to posterior tubercle. Cocoon pale purplish-red, attached by a silken peduncle to a leaf or twig, truncated and with a conical projection at one end. Feeds on *Celtis orientalis*.'

*Chalciope hyppasia* Cr.

Ovum spherical, olive green speckled with rusty red. The micropyle sunken and with sculptured ridges running from micropyle to base. Laid singly. Hatched on the third day.

Newly hatched larva very long and slender. 1st and 2nd pairs of abdominal prolegs absent. Resting position and mode of progression very Geometer-like. Head yellowish brown, body brownish green.

Half-grown larva with the ground colour greenish and three lateral purple brown lines. Venter with a dark median stripe and two purple brown lines on either side.

Full-grown larva—Head with the central portion yellowish with three purple brown lines, a semi-circular olive brown patch striped with yellowish on either side. Ground colour of the body pale yellow with the following longitudinal stripes composed of

minute dots—a dorsal lavender line in continuation of the central dark line of the head, a dark violet brown subdorsal stripe with an internal lavender line in continuation of the inner edge of the dark lateral patch of the head, a dark violet brown lateral stripe with a double lavender line between it and the subdorsal stripe,—and with a clearer yellow stripe containing a double rust-red line below it. 11th and 12th somites each with a black subdorsal dot. Venter sprinkled with minute reddish brown dots, a dark median stripe and indications of two slightly darker stripes on either side. Spiracles black. Legs yellow brown. Prolegs like the body.

Pupa in a slight cocoon of white silk spun among leaves. Pale purplish brown and covered with a white bloom. Apex of abdomen blunt with a ring of short teeth round it and ending in a few hooked spines.

Food-plant—*Rhynchosia minima* DC. (Leguminosae).

Described from a full-fed larva, bred from ova from a Calcutta caught female, 20-x-40, pupated 25-x-40, and a male emerged 3-xi-40.

*Ophideres fullonica* L.

Moore, *Trans. Zool. Soc.*, xi, 64, pl. 12, figs. 1, 1a.

Hamps., *Fauna Brit. Ind.*, Moths, ii, 560. 1894.

2nd instar—Head and body black. A white lateral streak on the 9th and 10th somites. Resting attitude with the legs and prolegs gripping close together and the body between looped, the hinder part held erect.

The ocelli on the 5th and 6th somites are indicated in the 3rd instar by orange red crescents. The rest of the adult markings developing in the 4th and 5th instars.

Full-grown larva—Head velvety black. Ground colour of body velvety black. Sublateral area sprinkled with minute white dots, which join into an irregular streak from the 5th somite backwards. 1st somite with a subdorsal line of minute white dots. 2nd somite with a pair of minute bright blue subdorsal specks anteriorly and a transverse median line of six similar specks. 3rd somite with a median transverse line of six bright blue specks. 4th somite with a divided creamy white lateral blotch with three minute blue specks above and three below arranged in the form of a triangle. 5th and 6th somites each with a black lateral ocellus surrounded by a wide ring, creamy white above and orange red below, and containing a bright blue spot as pupil. Two minute blue specks above and two below each ocellus. A deep maroon subdorsal stripe with a black central stripe, starting on the 5th somite in some larvae and on the 6th in others and extending to the anal flap. 7th to 10th somites each with a subdorsal triangle of minute blue specks and with two similar specks in front of each spiracle. 9th and 10th somites with an irregular and very broken creamy white lateral blotch. 10th and 11th somites with a creamy white sublateral streak in continuation of the sublateral speckling. 11th somite rising into a short cone dorsally, the apex maroon and interrupting the black ground colour



between the maroon subdorsal stripes, and with a creamy white stripe along the sides. Two bright blue dorsal dots in front of and one on each side of the maroon apex. 12th somite with three lateral and one subdorsal bright blue speck and marked with creamy white posteriorly. Spiracles orange red and set in bright maroon patches that increase in size from front to rear. Legs black banded with maroon. Prolegs black with the apex maroon, the 1st pair partially aborted, 2nd pair dotted externally with creamy white, 3rd and 4th pairs with a creamy white stripe. Venter black, some specimens with a double maroon median stripe.

Pupa in a cocoon of thin white silk spun between leaves. Dark purple mahogany, coarsely punctate and very highly polished. The apex of the abdomen with the cuticle wrinkled longitudinally and the cremaster consisting of four longish hooked spines with four shorter ones round them.

Food-plant—*Tinospora cordifolia* Miers (Menispermaceae).

Described from a full-fed larva found in Calcutta 24-viii-40, pupated 27-viii-40, and a male emerged 4-ix-40.

Hampson's description, which is presumably based on Moore's but makes no mention of the fact, is as follows:—'11th somite dilated and surmounted by a tubercle; colour dark purplish brown, the dorsum brown from 6th to 11th somites; legs red; spiracular scarlet patches largest posteriorly and with some irregular white markings round them, on somite 9 in the form of an oblique white bar; a yellow subdorsal mark on 4th somite; black ocelli with yellow iris and white pupils on 5th and 6th somites, and two yellow patches on 11th somite.'

### *Argadesa materna* L.

Ovum spherical, the base flattened. Pale yellow green without sculpturing and very small for the size of the insect. Laid singly or in twos and threes on the food-plant.

1st instar—Head brownish green. 1st somite with a brownish green dorsal plate. Body yellowish green and rather oily in appearance. A few short black hairs. 1st pair of prolegs completely aborted. Resting attitude with the true legs and abdominal prolegs gripping, the forepart of the body between them looped and the posterior portion held erect.

2nd instar—Head and body blackish brown. 2nd to 6th somites each with a pair of orange red lateral specks and a subdorsal orange red speck on each somite from 4th to 6th.

The adult markings develop in the subsequent instars.

Full-grown larva—Head black. Ground colour of body blackish brown. A double dorsal and double subdorsal red brown line, the latter interrupted by the ocelli on somites 5 and 6. 1st somite with two black-ringed bright blue dots at the base of the leg, an anterior lateral and posterior subdorsal black-ringed blue dot. 2nd and 3rd somites each with a pair of black-ringed blue dots subdorsally in front and a transverse series of six similar dots centrally. 4th somite with a sublateral and subdorsal triangle of three black-ringed blue dots. 2nd to 4th somites each with a double orange red sublateral speck. 4th somite with an orange red subdorsal

spot. 4th and 5th somites with a small cream-coloured dorsal spot. 5th and 6th somites with a lateral ocellus; this consists of a black spot, the lower part of which contains a blue crescent-shaped mark edged above with reddish, and which is surrounded by a broad ring, the upper anterior quarter creamy white, the rest orange red, and the whole ringed with black. Sublateral area speckled with white. Two black-ringed blue dots above and two below each ocellus. 7th to 10th somites each with a subdorsal and sublateral triangle of three black-ringed blue dots. A subdorsal line of whitish specks backwards from the 7th somite. 10th and 11th somites each with a cream-coloured dorsal spot. 11th somite rising into a cone, with a double yellowish pink blotch on each side and marked with cream behind, a black-ringed blue dot on either side of the apex and two more in front. 12th somite with a lateral triangle of black-ringed blue dots, a dorsal and subdorsal yellowish pink blotch with a black-ringed blue dot between them. Spiracles black. Legs and prolegs blackish brown, the 1st pair of prolegs completely aborted. Venter black brown with a dark median stripe, edged on each side with paler, and expanding into a black spot between each pair of prolegs, and with a dark stripe separating the ventral and sublateral areas. 2nd and 3rd somites with a pair of black-ringed blue dots in front of each leg, and 3rd to 5th and 9th with a submedian triangle of three similar dots, 10th and 11th somites also with similar markings but the apical dot very much separated from the two basal.

Another form is very similar in markings but with the ground colour velvety black and without the double dorsal and subdorsal lines. 11th and 12th somites with the markings cream instead of yellowish pink.

A third form has the head clay brown. The ground colour of the body clay brown with a darker dorsal stripe. The ocelli brownish purple with an indistinct pinkish crescent-shaped mark for pupil and surrounded by a double black ring, the upper quarter between the rings crimson, edged above and below with white, the other three quarters purplish brown. 7th to 11th somites with a dark subdorsal stripe with a central line of whitish dots. The sublateral area from the 5th somite backwards pinkish instead of speckled with white. Other markings similar to the first form.

Pupa in a thin cocoon of white silk spun between leaves. Rich mahogany brown, minutely punctate and very highly polished. The intersegmental areas of the abdomen darker. The spiracles almost black. The apex of the abdomen with the cuticle wrinkled into a honeycomb pattern and with the cremaster consisting of two longish hooked spines with a very short hooked spine on either side.

Food-plant—*Tinospora cordifolia* Miers (Menispermaceae).

Described from a number of full-fed larvae found in Calcutta 25-viii-40, one of which pupated 27-viii-40 and a female emerged 4-ix-40.

*Hyblaea puera* Cr.

Moore, *Lep. Ceyl.*, iii, 81, pl. 154, fig. 2a. 1884-87.

Hamps., *Fauna Brit. Indi.*, Moths, ii, 372. 1894.

Head smooth, bright reddish chestnut. 1st somite with a chestnut dorsal plate with a white median line through it. A broad golden fulvous dorsal stripe with a white median line and edged on each side with white. A broad whitish lateral line, the area between it and the subdorsal line golden fulvous with a large quadrate black spot on the forepart of each somite, the thoracic somites with this area almost entirely black. 4th to 11th somites each with a white-ringed black dot posteriorly immediately below the subdorsal line. 11th somite with a transverse yellowish white stripe between the subdorsal lines. 12th somite with a similar, but narrower, stripe with two black dots immediately in front of it. 13th somite with the anal plate yellowish brown with black dots. The area below the lateral line greenish yellow with two yellow lines. Venter greenish yellow. Legs pale chestnut brown. Prolegs yellowish green. Spiracles pale brown ringed with black. A few hairs. Lives in a spun together leaf and ejects a brownish fluid from the mouth when disturbed.

Pupa in a folded leaf lined with white silk. Rather slender, bright reddish chestnut. The cremaster fairly long and ending in a bunch of hooked spines, which are attached to the silk of the cocoon.

Described from a full-fed larva found in Calcutta 18-viii-40; pupated 20-viii-40 and a male emerged 26-viii-40.

Moore's description is 'Larva with a few short silky hairs; dark purplish grey above, olive-green below; with dorsal and lateral white lines, a subdorsal row of minute white dots and rings; a row of black dots on lateral line; head and second segment, and front legs black. Pupa dark purple-brown. Feeds on Bignoniaceae.' His plate shews a larva with the upper half deep violet and the lower yellow green. Hampson's description is based on that of Moore.

#### GEOMETRIDAE.

*Petelia medardaria* Herr.-Schaff.

Moore, *Lep. Ceyl.*, iii, 396, pl. 193, fig. 2b. 1884-87.

Head yellowish green, marked at the sides and on the vertex with brown. Ground colour of body bright green. A pinkish buff subdorsal stripe and an indistinct triple yellowish dorsal line. Spiracles red. Legs yellowish brown. Prolegs green, the feet reddish brown. Venter green frosted with white. Turns purple before pupation.

Pupa subterranean. Dark olive green in colour, the ventral surface of the abdomen slightly tinged with yellow. Cremaster a single stout spike, ending in several hooked spines.

Food-plant—*Zizyphus Jujuba*.

Described from a full-fed larva found in Calcutta 24-x-40, buried itself 27-x-40, and a female emerged 3-xi-40.

Moore gives the following description:—'Larva with 10 legs; smooth; purplish red, with slender longitudinal black lines; spiracles white. Pupa red, greenish in front, segments ringed with yellow.'

*Scopula emissaria* Wlk., *emissaria*.

Head slightly flattened in front, pale greenish brown with a paler sub-median stripe. Body yellowish green with a darker green dorsal stripe. Thoracic somites with an indistinct subdorsal and lateral whitish stripe. Spiracles black. Legs and prolegs greenish. Shape very long and slender, broadening slightly posteriorly. Resting attitude straight, but when alarmed the anterior portion of the body is coiled up.

Pupa in a slight web spun, in captivity, among litter. Slender, bright green with a slightly darker green dorsal stripe along the abdomen. Spiracles dark chestnut. Cremaster and last somite chestnut brown, the cremaster consisting of a bunch of hooked spines.

Food-plant—*Aeschynomene indica* Linn. (Leguminosae).

Described from a full-fed larva found in Calcutta 4-viii-40, pupated 6-viii-40, and a female emerged 10-viii-40.

(To be continued.)